Our reference: EF13/3893, DOC16/52234-02
Contact: John Goodwin

Mr Simon Truong
Department of Planning and Environment
GPO BOX 39
SYDNEY 2001

Dear Mr Truong

SSD 7311 – TARONGA ZOO RESEARCH AND EDUCATION FACILITY EIS

I am writing to you in reply to your invitation to the EPA to comment on the EIS for the above project.

The EPA requests that these comments be read in conjunction with the EPA's letter and attachment dated 15 October 2015.

The EPA emphasises that for reasons of maintaining regulatory 'arms length', it neither reviews nor endorses environmental management plans or the like appended to the EIS.

The EPA notes that the proposed development is in that part of the Zoo close to residences and includes demolition of some existing structures, provision for overnight stays by school groups, and laboratories and research facilities.

The EPA notes with concern that:

(i) Figure 1 to EIS Appendix N indicates that unattended noise monitoring for the purpose of establishing background noise levels was not undertaken in the appropriate location;

(ii) Section 3.2 of EIS Appendix N states that background noise level monitoring was undertaken between 23 September 2015 and 29 September 2015 but the noise monitoring graphs accompanying Appendix N are labelled 23 to 29 October 2015;

(iii) Bureau of Meteorology (BoM) observations for both periods referred to in preceding paragraph (ii), indicate that on several days the prevailing meteorological conditions were unsuitable for noise monitoring to establish background noise levels;

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(iv) section 4.5 to EIS Appendix N suggests typical construction hours that are inconsistent with the recommended standard hours of construction set out in Table 1 of the Interim Construction Noise Guideline;

(v) EIS Appendix N does not appear to canvas the need for intra-day respite periods in respect of highly intrusive noise generating activities which the Interim Construction Noise Guideline identifies as being proven to be particularly annoying to residents; and

(vi) EIS Appendix N does not appear to provide a detailed quantitative assessment of predicted operational noise impacts as required by the SEARs.

The EPA has identified the following site specific concerns based on the information available on the Department of Planning and Environment web site:

(a) the need for further assessment of any potential site contamination, particularly asbestos;

(b) demolition, site preparation, construction and construction-related noise impacts (including recommended standard construction hours and intra-day respite periods for highly intrusive noise generating work);

(c) demolition, site preparation, construction and construction-related dust control and management;

(d) demolition, site preparation, construction and construction-related erosion and sediment control and management;

(e) detailed assessment of operational noise impacts on noise sensitive receivers (especially surrounding residences) arising from operational activities, including establishment of background noise levels in accordance with guidance material provided in Chapter 3 of the NSW Industrial Noise Policy;

(h) operational storage, handling, transport and disposal of any 'clinical and related wastes' arising from the proposed laboratory and research facilities; and

(i) operational water conservation and energy efficiency measures.

The EPA expands on its concerns in Attachment A to this letter.

Should you require clarification of any of the above please contact John Goodwin on 9995 6838.

Yours sincerely

29.2.16

MIKE SHARPIN
Acting Manager Metropolitan Infrastructure
Environment Protection Authority
Encl. Attachment A

ATTACHMENT A

- ENVIRONMENT PROTECTION AUTHORITY COMMENTS –

TARONGA ZOO RESEARCH AND EDUCATION FACILITIES

1. General

The EPA considers that the project comprises two distinct phases (construction and operational) and has set out its comments on that basis.

2. Construction phase

The EPA anticipates a range of environmental impacts during the construction phase of the development which should be comprehensively addressed in detail by the environmental assessment.

The EPA anticipates that demolition, site preparation, construction and construction-related activities will be undertaken in an environmentally responsible manner with particular emphasis on –

- detailed site contamination investigation,
- compliance with recommended standard construction hours,
- waste management consistent with the hierarchy of re-use, recycle and then disposal as the last resort,
- feasible and reasonable noise and vibration minimisation and mitigation,
- intra-day respite periods from high noise generating construction activities (including jack hammering, rock breaking, pile boring or driving, saw cutting and vibratory rolling),
- effective dust control and management, and
- effective erosion and sediment control.

2.1 Site investigation

EIS Appendix F comprises the Preliminary Site Investigation report.

Chapter 9 of Appendix F confirms that "there were no obvious indicators of contaminating activities on the site other than imported filling and, in the later years, demolition of buildings that may have contained asbestos-containing material." And in that regard, the EPA refers to sections 2.2 and 2.3 of this Attachment.

The EPA further notes that Chapter 9 to Appendix F goes on to state that "... the site either is suitable or could be made suitable for the proposed development." as well as making statements about appropriate actions to make the site suitable.

However, the EPA notes that Chapter 8 (5th para) of Appendix F –

(a) when referring to "... human receptors to soil contamination ..." mentions 'workers/visitors' rather than explicitly acknowledging that 'school students and teachers' will not only use the new facilities during day-time but also during overnight stays, and

(b) does not acknowledge the prospect that 'visitors' and not just 'personnel and nearby workers' may potentially be exposed to contamination "... during the construction phase of the redevelopment project.".

Recommendation

The proponent be required to ensure that the site is made suitable for the proposed sensitive land use, including –

(a) undertaking detailed site investigations during demolition, site preparation and bulk excavation stages of the project,

(b) implementing actions recommended in Chapter 9 to EIS Appendix F, and

(c) developing and implementing appropriate management protocols to protect visitors, employees, volunteers and construction workers from exposure to soil contamination that may be encountered during demolition, site preparation, bulk earthworks and construction.

2.2 Waste control and management (general)

All wastes generated during demolition, site preparation, bulk earthworks and construction must be properly assessed, classified and managed in accordance with the EPA's guidelines to ensure proper treatment, transport and disposal at a landfill legally able to accept those wastes.

The EPA anticipates that, without proper site controls and management, mud and waste may be tracked off the site during the course of the project.

Recommendation

The proponent be required to ensure:

(1) all waste generated during demolition, site preparation, bulk earthworks and construction is assessed, classified and managed in accordance with the "*Waste Classification Guidelines Part 1: Classifying Waste*" (Department of Environment Climate Change and Water, December 2009);

(2) the body of any vehicle or trailer, used to transport waste or excavation spoil from the premises, is covered before leaving the premises to prevent any spill or escape of any dust, waste, or spoil from the vehicle or trailer; and

(3) mud, splatter, dust and other material likely to fall from or be cast off the wheels, the underside or the body of any vehicle, trailer or motorised plant leaving the site, is removed before the vehicle, trailer or motorised plant leaves the premises.

2.3 Asbestos sheeting

Appendix G comprises the Asbestos Inspection Report which identifies the presence or assumed presence of asbestos on the site. And, acknowledges that parts of the site were either not visible or accessible at the time of the inspection the subject of the Report.

Appendix G broadly outlines the measures to be adopted should it be encountered during the demolition, site preparation, and construction phases. And, refers to guidance material including the proponent's Asbestos Management Plan.

EPA guidance material concerning the handling, transport and disposal of asbestos wastes is available via the following link to its web-site

http://www.environment.nsw.gov.au/waste/asbestos/index.htm.

Recommendation

The proponent be required to satisfy the requirements of the Protection of the Environment Operations (Waste) Regulation 2014 with particular reference to Part 7 'asbestos wastes'.

Recommendation

The proponent should be required to consult with NSW WorkSafe concerning the handling of any asbestos waste.

2.4 Dust control and management

The EPA considers dust control and management to be an important air quality issue during demolition, site preparation, bulk earthworks and subsequent construction. For instance, bulk earthworks inevitably generate dust as a result of –

(a) the excavation, processing and handling of excavation spoil,

(b) wind action on spoil stock piles, and

(c) wind action on and plant movement across areas bare of vegetation or other cover.

Recommendation

The proponent be required to:

(a) minimise dust emissions on the site, and

(b) prevent dust emissions from the site.

2.5 Erosion and sediment control

Managing Urban Stormwater Soils and Construction, 4th Edition published by Landcom (the so-called 'Blue Book') provides guidance material for achieving effective erosion and sediment control on construction sites.

The EPA emphasises the importance of –

(a) not commencing earthmoving or vegetation removal until appropriate erosion and sediment controls are in place, and

(b) daily inspection of erosion and sediment controls which is fundamental to ensuring timely maintenance and repair of those controls.

Recommendation

The proponent be required to implement erosion and sediment control measures consistent with the practices and principles in –

- Managing Urban Stormwater Soils and Construction, Volume 1, 4th Edition, 2004, and

- Managing Urban Stormwater Soils and Construction Volume 2A Installation of Services.

2.6 Noise

The EPA notes the location of residences to the north and west of the development site.

The EPA considers that the project is likely to generate significant noise impacts on surrounding residences and other noise sensitive land uses during demolition, site preparation, bulk earthworks and construction.

The EPA further notes EIS Appendix N refers to the Interim Construction Noise Guideline (ICNG) and presents a qualitative assessment of construction noise. However, the ICNG clearly states that the qualitative assessment is appropriate for works of not more than 3 weeks duration. Appendix N estimates that the construction phase of the project will have a duration of 12 to 15 months, therefore a quantitative assessment is appropriate.

2.6.1 construction hours (including respite periods)

Section 4.5 to EIS Appendix N proposes construction from 8.00 am to 5.00 pm on Saturdays which is inconsistent with the recommended standard construction hours of 8.00 am to 1.00 pm on Saturdays as set out in Interim Construction Noise Guideline (ICNG) Table 1.

Recommendation

The proponent be required to undertake all demolition, site preparation, excavation and construction during the standard construction hours recommended in Table 1 Chapter 2 of the Interim Construction Noise Guideline, July 2009

2.6.2 *intra-day respite periods*

ICNG section 4.5 (page 16) specifies construction activities proven to be particularly annoying and intrusive to nearby residents. The EPA anticipates that those activities generating noise with particularly annoying or intrusive characteristics would be subject to a regime of intra-day respite periods where –

(a) they are only undertaken after 8.00 am,

(b) they are only undertaken over continuous periods not exceeding 3 hours with at least a 1 hour respite every three hours, and.

(c) 'continuous' means any period during which there is less than an uninterrupted 60 minute respite between temporarily halting and recommencing any of the types of work referred to in ICNG section 4.5.

Recommendation

The proponent be required to schedule intra-day 'respite periods' for construction activities identified in the Interim Construction Noise Guideline as being particularly annoying to noise sensitive receivers, including surrounding residents.

2.6.3 queuing and idling construction vehicles and vessels

The EPA is aware from previous major infrastructure projects that community concerns are likely to arise from noise impacts associated with the early arrival and idling of construction vehicles (including concrete agitator trucks) at the development site and in the residential precincts surrounding that site.

Recommendation

The proponent be required to ensure construction vehicles (including concrete agitator trucks) involved in construction and construction-related activities do not arrive at the project site or in surrounding residential precincts outside approved construction hours.

2.6.4 *reversing and movement alarms*

The EPA has identified the noise from 'beeper' type plant movement alarms to be particularly intrusive and is aware of feasible and reasonable alternatives. Transport for NSW (nee Transport Construction Authority), Barangaroo Delivery Authority/Lend Lease and Leighton Contractors (M2 Upgrade project) have undertaken safety risk assessments of alternatives to the traditional 'beeper' alarms. Each determined that adoption of 'quacker' type movement/reversing alarms instead of traditional beepers on all plant and vehicles would not only maintain a safe workplace but also deliver improved outcomes of reduced noise impacts on surrounding residents.

Interim Construction Noise Guideline Appendix C provides additional background material on this issue.

The proponent should commit to undertaking a safety risk assessment of construction activities to determine whether it is practicable to use audible movement alarms of a type that would minimise the noise impact on surrounding noise sensitive receivers, without compromising safety.

3. Operational phase

The EPA considers that environmental impacts that arise once the proposed facilities commence operation can largely be averted by responsible environmental management practices, particularly with regard to:

(a) feasible and reasonable noise mitigation and management;

(b) proper assessment, storage, handling, transport and disposal of wastes, especially clinical and related waste;

(c) water quality impact avoidance and minimisation; and

(d) energy and water conservation.

3.1 Noise impacts

EPA is aware from long experience that significant risks of unacceptable noise impact which may arise from inadequate noise management and mitigation measures.

The EPA notes the proposed provision for overnight stays by school groups which may increase the likelihood of unacceptable noise impacts associated with overnight operation of mechanical ventilation.

The EPA anticipates that the proposed facilities may change the nature and intensity of noise impacts on surrounding residences. The *NSW Industrial Noise Policy, January 2000* (INP) provides guidance material on noise impact assessment.

EIS Appendix N *Acoustic Report* comprises the 'Environmental Nosie Assessment' prepared by Acoustic Logic.

Figure 1 to EIS appendix N indicates that the unattended noise monitoring required to establish the background noise level was undertaken within the Zoo instead of at the location (i.e. residences) set out in Table 3.1 *Methods for determining background noise* to the INP.

Section 3.2 of EIS Appendix N indicates that unattended noise monitoring to establish the background noise level at the site was undertaken between 23 September and 29 September 2015. However, the EPA notes as outlined in the cover letter to this Attachment that weather conditions observed at the Bureau of Meteorology (BoM) weather station (i.e. Observatory Hill) were unfavourable for noise monitoring to establish existing noise levels in the locality. For instance, rainfall was recorded on 6 of the 7 days of the monitoring period with 31.8 millimetres recorded on Friday 25 September 2015. Similarly, wind speeds greater than 5 metres per second (i.e. 18 kilometres per hour) were recorded. Whilst the BoM data does not present the average wind speed, the observations point to windy conditions throughout the entire monitoring period (i.e. wind gusts from 28 to 69 kilometres per hour and wind speeds greater than 18 kilometres per hour at both 9.00 am and 3.00 pm on 4 of the 7 days of monitoring).

However, the EPA notes that the noise monitoring graphs attached to Appendix N are labelled 23 October 2015 to 29 October 2015. Nevertheless, on the assumption that the noise monitoring was actually undertaken in October 2015 rather than September, rain and wind speeds exceeding 18 kilometres per hour were also observed on several days between 23 and 29 October 2015.

EIS Appendix N does not appear to provide any justification for not excluding the weather affected noise monitoring data used to establish the measured background noise levels presented in Table 2, which data may have been conflated by unfavourable meteorological conditions.

The project SEARs require a quantitative assessment of noise sources during operation. However, EIS Appendix N does not include a comprehensive assessment of noise impacts associated with operation of the new facilities.

Section 3.5.2 to EIS Appendix N acknowledges that supply and exhaust fans "...typically emit high noise levels and require acoustic treatment. However, section 3.5.1 to EIS Appendix N indicates that instead of predicting noise impacts from operation of typical mechanical plant, an assessment is proposed instead to be undertaken on commissioning of that plant.

The EPA notes that EIS section 7.13 outlines a number of operational noise mitigation measures, including in relation to overnight stays (i.e. 'Zoosnooz'). However, the 3rd dot point under the sub-heading *Noise Management* (p.54) requires clarification of whether it is intended to refer to a public address system.

Accordingly, the EPA is unable to provide informed comments on predicted operational noise impacts of the project on surrounding noise-sensitive receivers.

Recommendation

The proponent be required to establish background noise levels for the locality by undertaking noise monitoring in accordance with guidance material provided in Chapter 3 to the NSW Industrial Noise Policy.

Recommendation

The proponent be required to –

(a) provide a detailed operational noise impact statement that incorporates feasible and reasonable measures to avoid, minimise and manage noise, including noise from mechanical plant, and

(b) to incorporate those noise avoidance and minimisation measures at the design stage of the project as required by the SEARs issued in respect of the project.

Recommendation

The proponent be required to avert unacceptable noise impacts on surrounding noise-sensitive receivers by –

- establishing and fostering a good relationship with surrounding residents (including facilitation of the logging noise complaints and of obtaining an active and timely response to those complaints); and

- undertaking a compliance noise monitoring program at various periods after commencement of operation of the project to verify that measured noise levels do not exceed levels predicted in the required noise impact statement and relevant noise criteria in the NSW Industrial Noise Policy, January 2000.

3.2 Clinical and related waste

The EPA anticipates that the proposed laboratory and research facilities may generate 'clinical and related waste' in the nature of 'sharps waste' which are defined in clause 50 of Schedule 1 to the Protection of the Environment Operations Act 1997 as follows -

*'**Clinical and related waste**' includes clinical waste; cytotoxic waste; pharmaceutical, drug or medicine waste; and sharps waste.*

*'**Sharps waste**' means any waste collected from designated sharps waste containers used in the course of business, commercial or community service activities, being waste resulting from the use of sharps for any of the following purposes:*

(a) human health care by health professionals and other health care providers,
(b) medical research or work on cadavers,
(c) veterinary care or veterinary research,
(d) skin penetration or the injection of drugs or other substances for medical or non-medical reasons,

but does not include waste that has been treated on the site where it was generated (and to a standard specified in an EPA Gazettal notice) or waste that has been treated by a method approved in writing by the Secretary of the Ministry of Health.

Recommendation

The proponent be required to identify the nature and scope of clinical and related waste likely to be generated during operation of the zoo and the measures proposed to handle, store, transport and dispose of those wastes.

3.2.1 Trackable waste

Clinical and related waste is identified in Part 1 of Schedule 1 to the Protection of the Environment Operations (Waste) Regulation 2014 as trackable waste subject to the requirements of Part 4 of that Regulation.

However, a limited exemption applies to the tracking of clinical and related waste transported only within New South Wales. The notice of exemption is available via the following link –

http://www.epa.nsw.gov.au/wasteregulation/track-clinical.htm

Recommendation

The EIS should identify how the proponent will ensure compliance with any relevant trackable waste requirements of Part 4 of the Protection of the Environment Operations (Waste) Regulation 2014 in relation to clinical and related waste generated in the course of zoo operations.

3.3 Radiation Control Act and Regulation

The EPA notes that EIS section 7.6 (final dot point) states that "*The proposed use will not involve activities associated with radioactive substances, radiation apparatus or the like*".

3.4 Water Quality

The EPA notes that the site adjoins Sydney harbour.

The EPA further notes that EIS section 7.6 (5th dot point, p.50) indicates that stormwater runoff from roadways and paths will be directed to the existing water treatment and recycling works which are subject to an environment protection licence administered by the EPA.

The EPA's input to the SEARs advised that the EIS should provide a detailed assessment of potential operational impacts on water quality in Sydney Harbour, including Little Sirius Cove. And should, identify feasible and reasonable measures including rainwater re-use to minimise those impacts.

The EPA further advised that the EIS should explicitly:

a) identify pollutants likely to be generated by project activities, including stormwater runoff, and estimate the concentration and quantity of those pollutants;

b) assess the impact of any pollutants referred to in paragraph (a) on Harbour waters; and

c) include details of practical measures proposed to be adopted to prevent, control, abate and mitigate any water pollution arising from the project activities, including upgrades to the existing water treatment and recycling works.

3.5 Energy and Water Conservation

The EPA notes that EIS section 7.12 identifies a number of practical opportunities to -

a) minimise energy use, and

b) minimise consumption of potable water.

However, the EIS does not appear to identify practical opportunities to –

(a) satisfy energy requirements with energy from renewable sources (example: rooftop solar), or

(b) maximise water re-use (example: stormwater runoff from building roof surfaces).
